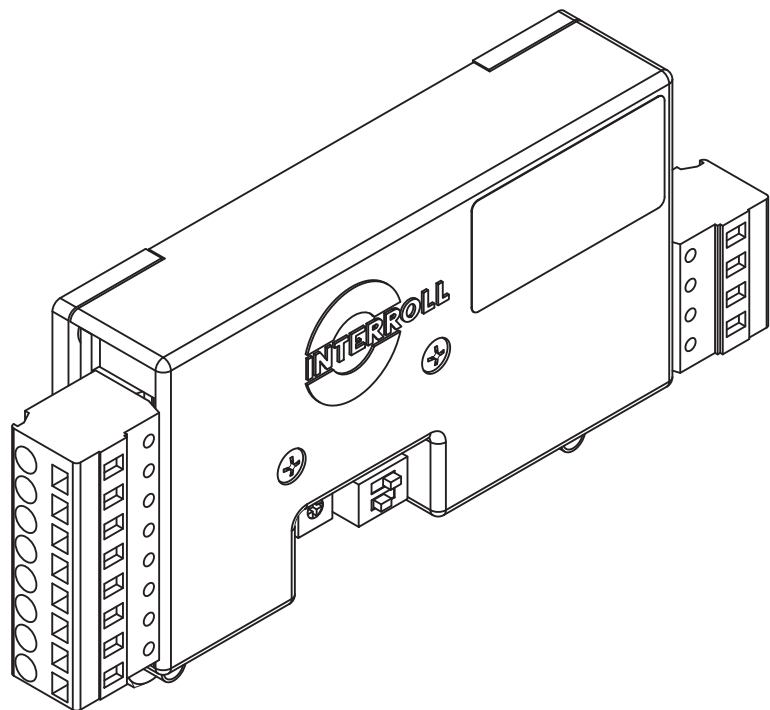




WE MAKE THE WORLD MOVE



# User Manual

## Interroll DriveControl

### DC-EC100

**Manufacturer**

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## Introduction

### Handling of the user manual

#### Content of the manual

This manual contains important advice, notes, and information about the DC-EC100 in all phases of its lifecycle:

- Transport, assembly, and commissioning
- Safe operation, maintenance, troubleshooting, and disposal
- Accessories

#### Validity of the manual

The manual describes the DC-EC100 as it is delivered by Interroll.

Special application designs require validation from Interroll and additional technical instructions.

#### This manual is part of the product

- For trouble-free, safe operation and warranty claims, read this manual and follow the instructions before handling the DC-EC100.
- Keep this manual near to the DC-EC100.
- Pass this manual on to any subsequent operator or occupant of the DC-EC100.
- Interroll does not accept any liability for malfunctions or defects due to non-observance of this manual.
- If you have any questions after reading this user manual, feel free to contact our customer service. See the last page for contact information.

### Warnings in this manual

The warnings in this document refer to risks which may arise while using the DC-EC100. For relevant warnings, see *"Safety", page 4* and the warnings at the beginning of each chapter.

There are three categories of danger. The following signal words are used in the document as required:

- Danger
- Warning
- Caution

| Signal word | Meaning                                                                                         |
|-------------|-------------------------------------------------------------------------------------------------|
| Danger      | Indicates a hazardous situation which, if not avoided, will result in death or serious injury.  |
| Warning     | Indicates a hazardous situation which, if not avoided, could result in death or serious injury. |
| Caution     | Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.  |

#### Structure of warnings

|                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <div style="background-color: black; color: white; padding: 5px; display: flex; align-items: center;">  <span style="margin-left: 5px;"><b>DANGER</b></span> </div> <p><b>Nature and source of the hazard</b><br/>Possible consequence of non-observance</p> <p>➤ Information about how to avoid the hazard.</p> |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Introduction

### Further symbols

#### ***NOTICE***

**This symbol identifies possible material damage.**

➤ Information about how to avoid damage.



This symbol displays safety instructions.



This symbol marks useful and important information.

➤ This symbol marks the steps that have to be carried out.

## Safety

### General safety instructions

The DC-EC100 is designed according to the technical state of the art and is reliable in operation, once distributed. However, risks may still arise.

- Risks of physical injury to the user or bystanders.
- Adverse effects of the DriveControl and other material.



Disregarding the warnings in this manual may lead to serious injury.

- Always read the entire operating and safety instructions before starting to work with the DriveControl and follow the information contained herein in full.
- Only instructed and qualified persons may work with the DriveControl.
- Always keep this user manual at hand when working on the DriveControl so that you can consult it quickly if required.
- Always comply with relevant national safety regulations.
- If you have any questions after reading this user manual, feel free to contact our customer service. See the last page for contact information.

### Intended use

The DC-EC100 may only be used for industrial applications and in an industrial environment to control a RollerDrive EC100. It must be integrated in a conveyor module or a conveying system. Any other use is considered inappropriate.

Use of the DC-EC100 is only allowed in the areas described under product information.

Any changes that affect the safety of the product are not allowed.

The DC-EC100 may only be used within the given operation limits.

### Unintended use

Applications not according to the intended use of the DC-EC100 require approval from Interroll.

## Safety

### Qualified persons

Qualified persons are persons who read and understand the manual and, taking national regulations into account, can competently execute incidental work.

Only instructed and qualified persons may work with the DriveControl, taking the following into account:

- the relevant manuals and diagrams,
- the warning and safety instructions in this manual,
- the system specific regulations and requirements,
- national or local regulations and requirements for safety and accident prevention.

### Risks



The following list informs you about the various types of danger or damage that may occur while working with the DC-EC100.

#### **Persons**

- Maintenance or repair work must only be executed by authorized and qualified persons in accordance with the applicable regulations.
- Before using the DriveControl, ensure that no unauthorized persons are near the conveyor.

#### **Electricity**

- Only perform installation and maintenance work after you have switched off the power. Ensure that the power cannot be turned on accidentally.

#### **Working environment**

- Do not use the DriveControl in explosive atmospheres.
- Remove equipment or material which is not required from the workspace.

#### **Avoiding malfunctions in operation**

- Regularly check the DriveControl for visible damage.
- In case of fumes, turn off the power at once and ensure that it cannot be turned on accidentally.
- Contact qualified personnel immediately to find the source the malfunction.

#### **Maintenance**

- As the product is maintenance free, you only need to check regularly for visible damage and that all leads and screws are still tightened.

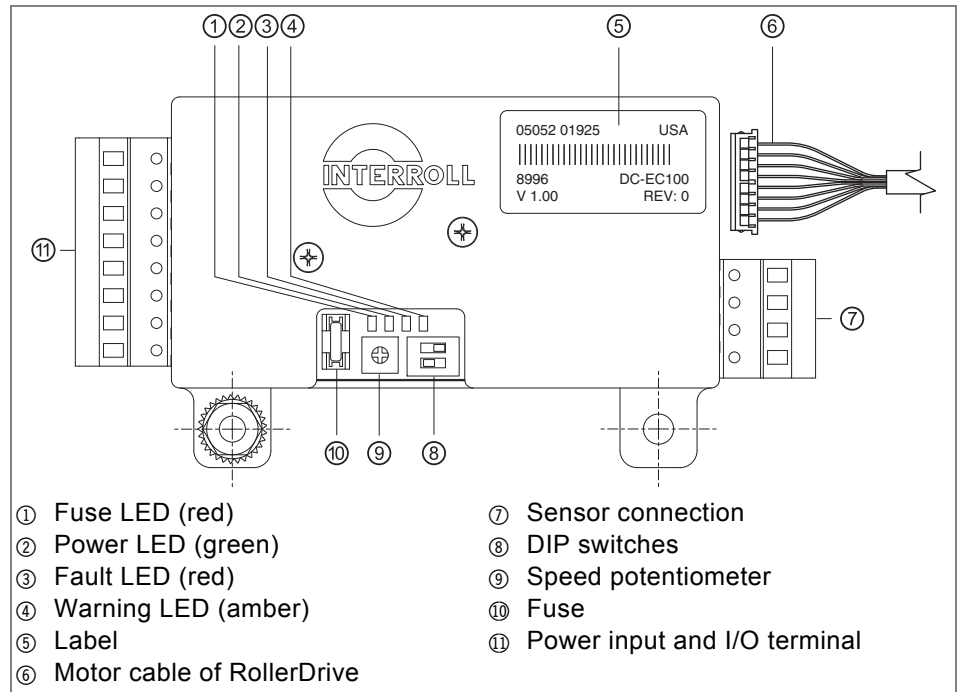
### Interfaces

By assembling the DriveControl in a conveyor module, potential hazards may occur. These are not described in this manual and have to be analyzed during the design, installation, and startup of the conveyor module.

- After assembling the DriveControl in a conveyor module, check the whole system for any new potential dangerous condition prior to turning on the conveyor.

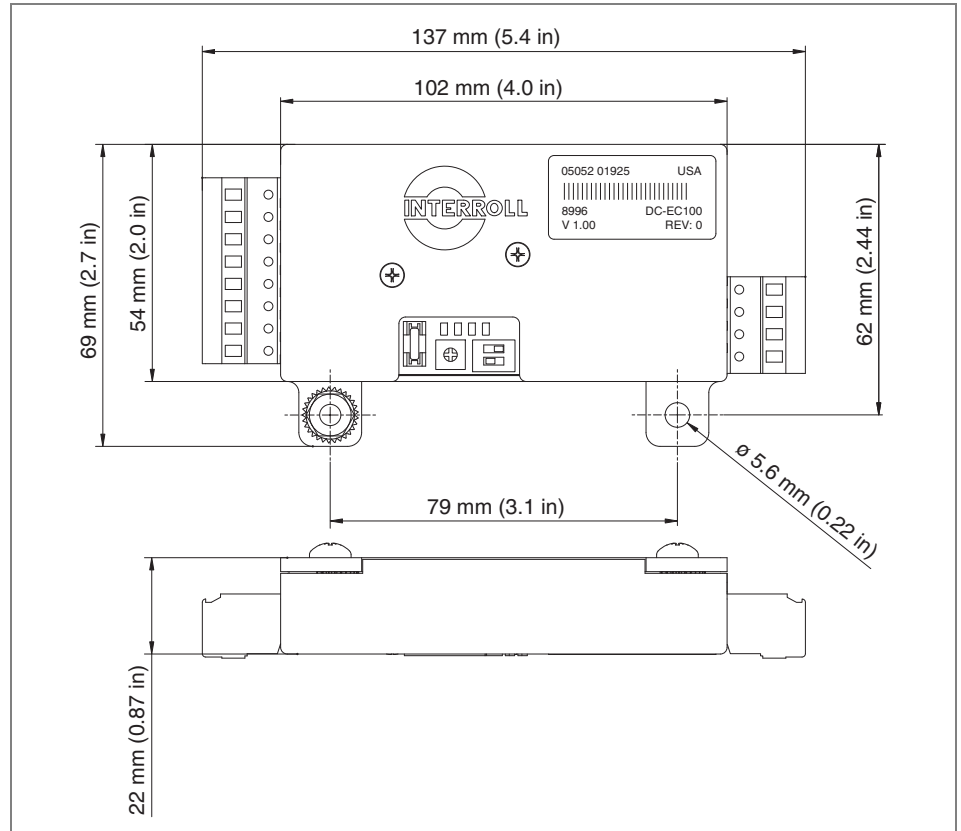
## Product information

### Components



## Product information

### Dimensions



### Mounting hardware

The following mounting hardware is supplied:

- 2x button head screw 10-32 UNF x 0.5"
- 2x nut with captive star washer 10-32 UNF

## Product information

### Product description

The DC-EC100 must be used in conjunction with a RollerDrive EC100.

#### Features

- **Diagnostics:** LEDs provide motor and sensor diagnostics as well as power, fuse, and temperature status.
- **NPN or PNP:** All inputs and outputs can be switched for NPN or PNP with one switch. The "No fault output" is always PNP (fail-safe).
- **Zero motion hold:** When the RollerDrive is stopped, it will be held in place.
- **Regenerative braking:** Motor acts like a generator and feeds back energy to the power bus.

#### Safety and stall functions

There are different levels of over-temperature or stall-related functions:

- **Motor temperature foldback:** At a motor temperature of 80 °C (176 °F) the DriveControl will fold back peak current down to continuous current. This is indicated by the amber LED lighting up constantly. When the RollerDrive cools down, the amber LED extinguishes, and the maximum peak current is now possible again. The motor can run at this reduced current limit indefinitely without harming the DriveControl or RollerDrive.
- **Motor temperature shutdown:** At a motor temperature of 100 °C (212 °F) the DC-EC100 will shut down the motor and the motor will go into regenerative braking. This is indicated by the red LED. When the RollerDrive cools back down, the red LED extinguishes and RollerDrive operation will resume.
- **Motor stall current limiting:** When the motor is stalled, the current will fold back to 1.4 A until the stall is cleared.
- **DriveControl temperature foldback:** At a card temperature of 70 °C (158 °F) the DriveControl will fold back peak current down to continuous current. This is indicated by the amber LED lighting up constantly. When the DriveControl cools down, the amber LED extinguishes, and the maximum peak current is now possible again. The DriveControl can run at this reduced current limit indefinitely without harm to the DriveControl or RollerDrive.
- **DriveControl temperature shutdown:** At a DriveControl temperature of 90 °C (194 °F) the DriveControl will shut down the RollerDrive and the motor will go into regenerative braking. This is indicated by the red LED. When the DriveControl cools back down the red LED extinguishes and RollerDrive and DriveControl operation will resume.

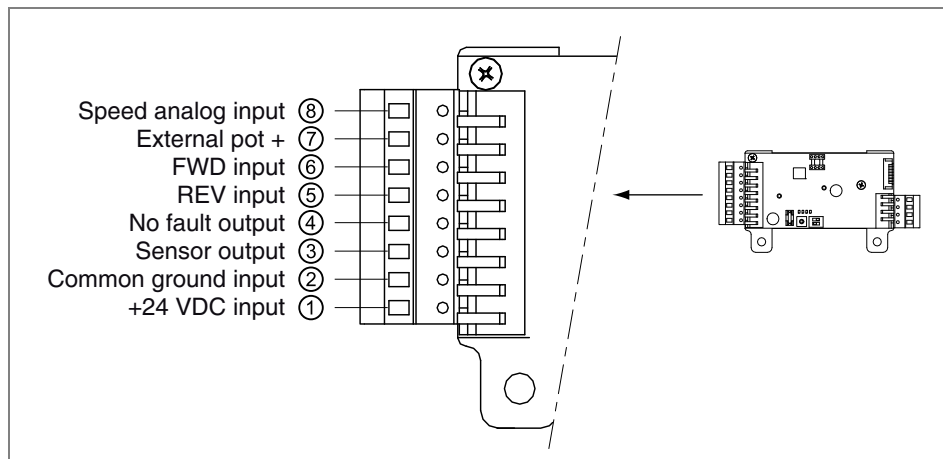
### Incline and decline applications

Due to the zero motion hold and regenerative braking features, the DC-EC100 and RollerDrive EC100 can be used for incline and decline applications up to an angle of 15°.

## Product information

### Inputs and outputs

#### Power input and I/O connections



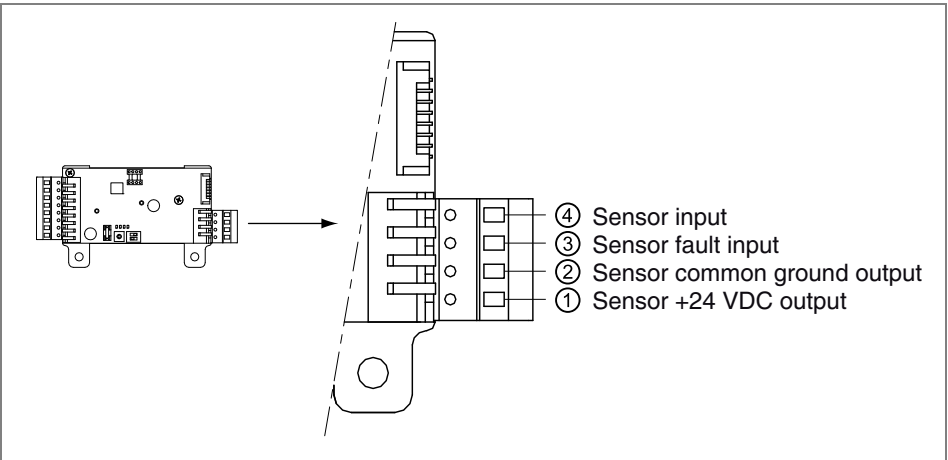
- ⑧ **Speed analog input:** External speed control down to approximately 23% of the maximum speed, if a 0 to 5 VDC PLC or analog input is connected between here and GND. When using a 10 kΩ external potentiometer, the wiper must be connected here. The on-board potentiometer should be set to maximum (CW) so it will not affect the external speed setting (for the wiring diagrams, *see page 15*).
- ⑦ **External pot+:** An external 10 kΩ potentiometer can be used to adjust the speed down to approximately 23% of the maximum speed. The on-board potentiometer should be set to maximum (CW) so it will not affect the external speed setting (for the wiring diagrams, *see page 15*).
- ⑥ **FWD input:** Normal rotation is CCW, seen from the cable end. This input is PNP/NPN selectable (with DIP switch 1).
- ⑤ **REV input:** Causes the RollerDrive to operate in reverse transport mode while the signal is active. Normal reverse rotation is CW, seen from the cable end. This input is PNP/NPN selectable (with DIP switch 1).
- ④ **No fault output:** Active high (+24 VDC) when either in NPN or PNP mode. Signal goes low only when system faults occur.
- ③ **Sensor output:** Signal passed through from the sensor input. This output is PNP/NPN selectable (with DIP switch 1).
- ② **Common ground input:** Must be connected to the main power ground.
- ① **+24 VDC input:** Main power supply 24 VDC (for voltage range, *see "Technical data", page 12*).



The DC-EC100 is protected against reverse polarity, but the power supply must provide a short circuit or over current protection and a voltage ripple tolerance of less than 5%.

## Product information

### Sensor connection



- ④ **Sensor input:** Signal from external source, typically a photoeye. Passed through to the sensor output. This input is PNP/NPN selectable (with DIP switch 1).
- ③ **Sensor fault input:** If sensor has a fault output for low gain, it can be connected to this input. This input is PNP/NPN selectable (with DIP switch 1).
- ② **Sensor common ground output:** Power ground connection for sensor.
- ① **Sensor +24 VDC output:** +24 VDC power supply for sensor.

### DIP switches

The DIP switches allow the selection of the logical convention and the direction. The default DIP switch settings are all OFF.



DIP switch settings are read at reset (power-up) only.

|                                                                                     |  |           |            |
|-------------------------------------------------------------------------------------|--|-----------|------------|
|  |  | <b>ON</b> | <b>OFF</b> |
| SW2: Rotation                                                                       |  | CW        | <u>CCW</u> |
| SW1: Logic                                                                          |  | PNP       | <u>NPN</u> |

### DIP switch settings

The following table shows the switch position for different situations:

| DIP switch      | ON (left position)                                                                   | OFF (right position)                                                                                                                                                                                |
|-----------------|--------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SW2<br>Rotation | <b>Clockwise</b> (rotation of the RollerDrive seen from the cable end)               | <b>Counter clockwise</b> (rotation of the RollerDrive seen from the cable end)                                                                                                                      |
| SW1<br>Logic    | <b>PNP:</b> all external inputs, photoeye input and output are active high (24 VDC). | <b>NPN:</b> all external inputs, photoeye input and output are active low (0 VDC ground). This excludes the "No fault output" which is always active high (+24 VDC) when in either NPN or PNP mode. |

## Product information

### Meaning of the LEDs

The LEDs provide motor and sensor diagnostics as well as power, fuse, and temperature status. The following table shows the meaning of the LEDs:

| LED     | Color | Status                             | Meaning                                                                              |
|---------|-------|------------------------------------|--------------------------------------------------------------------------------------|
| Fuse    | red   | on steady (all other LEDs are off) | Fuse blown                                                                           |
| Power   | green | on steady                          | Power OK                                                                             |
| Fault   | red   | on steady                          | Stalled motor                                                                        |
|         |       |                                    | Low gain signal from sensor                                                          |
|         |       |                                    | Motor or motor cable disconnected                                                    |
|         |       |                                    | Over-voltage detection<br>29 VDC $\pm$ 0.2 VDC (will cease normal operation)         |
|         |       |                                    | Under-voltage detection<br>19 VDC $\pm$ 0.2 VDC (will cease normal operation)        |
|         |       |                                    | DriveControl severe temperature shut-down (will cease normal operation until cool)   |
|         |       |                                    | Motor severe temperature shut-down (will cease normal operation until cool)          |
| Warning | amber | on steady                          | Low gain or bad sensor (sensor with fault output connected)                          |
|         |       |                                    | Motor current is limited to maximum continuous current due to motor over-temperature |
|         |       |                                    | Motor current is limited to maximum continuous current due to card over-temperature  |

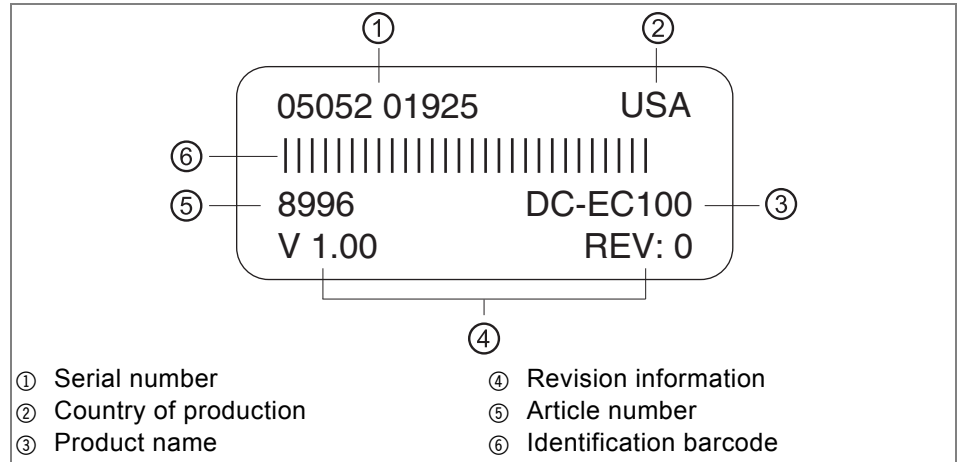


There is no error output if the amber LED is on.

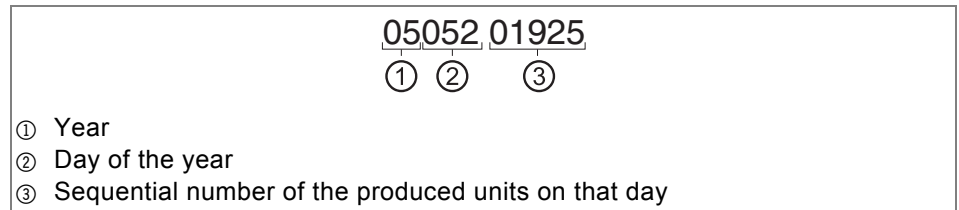
## Product information

### DriveControl label

The specifications on the DriveControl label are used to identify the DC-EC100. This is required to use the DriveControl as intended.



The serial number contains the following information about the production date:



### Technical data

|                                               |                                                         |
|-----------------------------------------------|---------------------------------------------------------|
| Nominal voltage                               | 24 VDC                                                  |
| Voltage range                                 | 18 to 28 VDC                                            |
| Voltage ripple tolerance                      | < 5%, < 1% recommended                                  |
| Continuous current                            | 1.8 A                                                   |
| Peak current                                  | 4.1 A                                                   |
| Fuse                                          | 5 A slow blow Littlefuse 0452005                        |
| Protection classification                     | IP20                                                    |
| Ambient temperature for operation             | 0 °C to 40 °C (32 °F to 104 °F)                         |
| Ambient temperature for transport and storage | -20 °C to 75 °C (-4 °F to 167 °F)                       |
| Ambient temperature changes                   | max. 1 °K/min; 3 h; two cycles according to IEC 68-2-14 |
| Ambient humidity                              | max. 90% not condensing                                 |
| Installation altitude above sea level         | max. 1000 m (max. 3300 ft)                              |

## Product information

### Speed settings

#### On board speed setting

The speed can be continuously adjusted (between 100% and approximately 33%) by the potentiometer on the DriveControl. Default setting is maximum.

| <b>Gear ratio</b> | <b>Speed range<br/>RollerDrive EC100 + DC-EC100</b> |
|-------------------|-----------------------------------------------------|
| 12:1              | 1.32 to 0.44 m/s<br>(260 to 87 fpm)                 |
| 16:1              | 1.03 to 0.34 m/s<br>(202 to 67 fpm)                 |
| 24:1              | 0.69 to 0.22 m/s<br>(135 to 45 fpm)                 |
| 36:1              | 0.44 to 0.15 m/s<br>(88 to 29 fpm)                  |
| 48:1              | 0.35 to 0.12 m/s<br>(68 to 22 fpm)                  |
| 64:1              | 0.25 to 0.08 m/s<br>(50 to 17 fpm)                  |
| 96:1              | 0.17 to 0.06 m/s<br>(34 to 11 fpm)                  |

## Product information

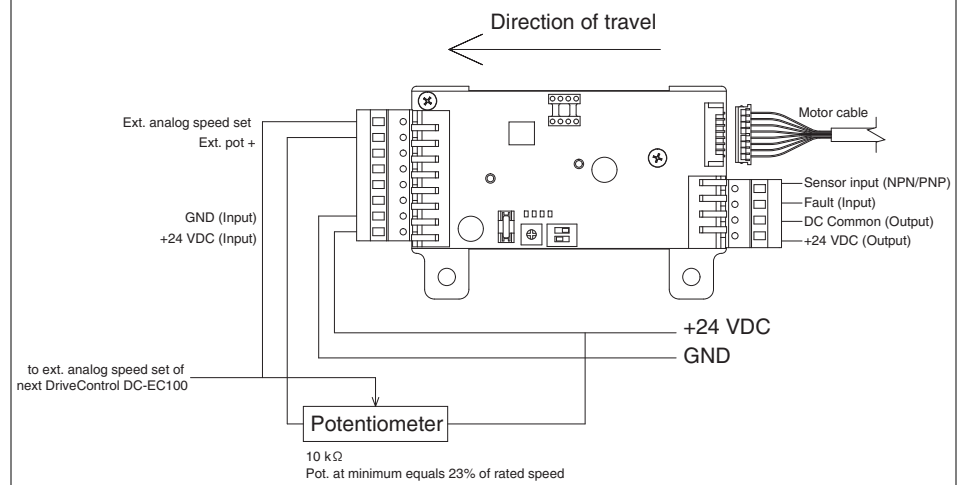
### External speed setting

Apart from the potentiometer on the DriveControl, there are other ways to set the speed.



When the DIP switch settings ON / OFF are stated, both settings are possible for the wiring shown (for the meaning of the settings, see *"DIP switches"*, page 10).

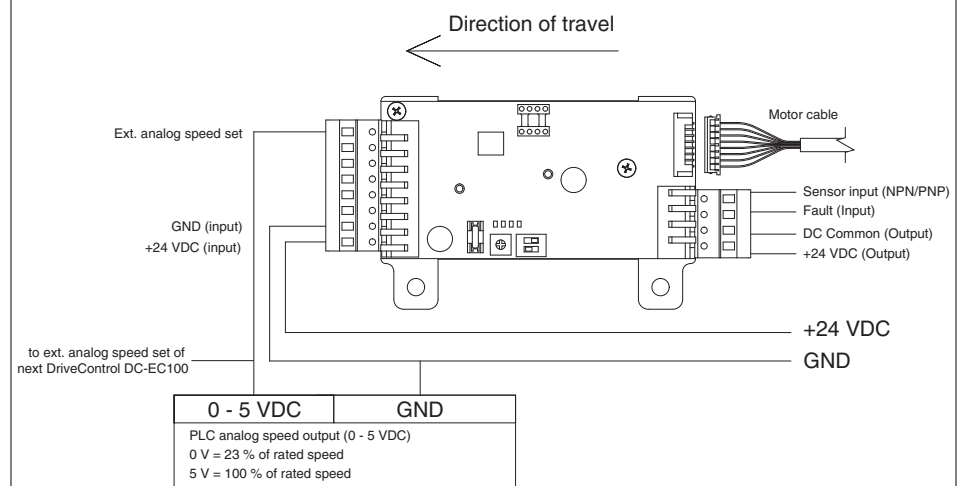
#### External speed set by potentiometer



DIP switch settings:

- SW2: ON / OFF
- SW1: ON / OFF

#### External speed set by PLC



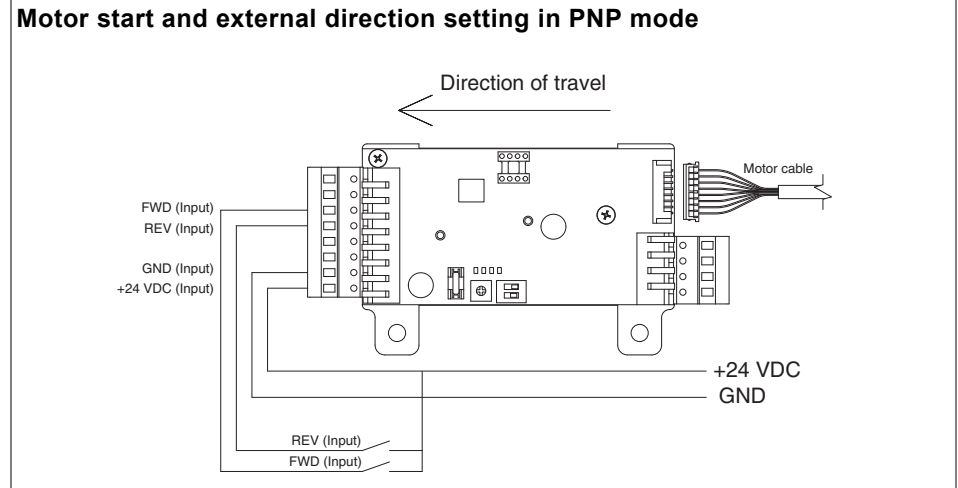
DIP switch settings:

- SW2: ON / OFF
- SW1: ON / OFF

## Product information

### Wiring diagrams

#### Motor start and external direction setting

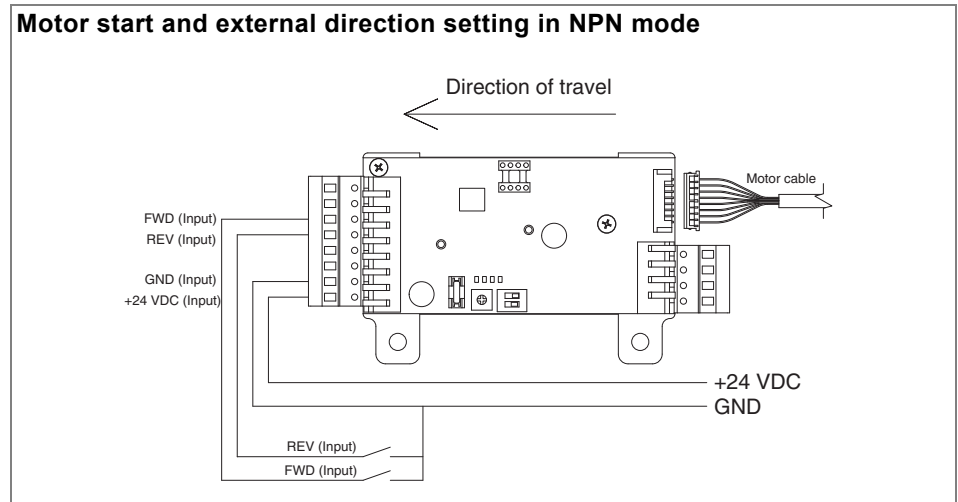


DIP switch settings:

- SW2: ON / OFF
- SW1: ON

RollerDrive rotation direction:

- FWD connected to 24 VDC at PNP mode causes ccw rotation.
- REV connected to 24 VDC at PNP mode causes cw rotation.
- FWD and REV connected to 24 VDC at PNP mode causes coast mode.



DIP switch settings:

- SW2: ON / OFF
- SW1: OFF

RollerDrive rotation direction:

- FWD connected to GND at NPN mode causes ccw rotation.
- REV connected to GND at NPN mode causes cw rotation.
- FWD and REV connected to GND at NPN mode causes coast mode.

## Transport and storage

### Transport

- Each DriveControl is packed in its own carton case.



#### **CAUTION**

##### **Risk of injury due to improper transport**

- Transport may only be carried out by qualified and authorized persons.
- Observe the following notices.

- Do not stack more than four carton boxes.
- Check the fixation of the DriveControls before transport.
- Avoid hard shocks during transport.
- Check each DriveControl visually for damage after transport.
- In case of damage, take photos of the damaged parts.
- To maintain the warranty, instantly report any damage caused during transport to the transport company and to Interroll.
- Do not transfer the DriveControls between warm and cold environments as this may cause condensing water.

### Storage



#### **CAUTION**

##### **Risk of injury due to improper storage**

- Do not stack more than four carton boxes.

- Check each DriveControl for damage after storage.

## Assembly

### Warning notices concerning assembly

#### **NOTICE**

**Risk of damage leading to failure or shortened life expectancy of the DriveControl**

➤ Observe the following notices.

- Do not drop or mishandle the DriveControl to avoid internal damage.
- Check each DriveControl visually for damage before assembly.

### Warning notices concerning the electrical installation

#### **NOTICE**

**Risk of damage to the DriveControl**

➤ Observe the following notices.

- The electrical installation may only be executed by qualified and authorized persons.
- Disconnect the power before installing, removing or rewiring the DriveControl.
- Do not apply AC current to the RollerDrive or DriveControl device at any time as this will cause irreparable damage.
- Do not apply too much stress to the connector pins. Bending the wires at the connector can cause damage to the insulation of the wires, which could result in failure of the DriveControl or the RollerDrive.
- Ensure that the RollerDrive, the DriveControl and the 24 VDC power source are properly earthed through the frame or supporting structure in which the RollerDrive and the DriveControl are installed. Failure to do so could cause the buildup of static electricity or ground loops and can cause the motor or DriveControl to malfunction or fail prematurely.
- Do not spin the RollerDrive manually, as this generates an induction voltage which could damage the DriveControl.

## Assembly

### Installing the DC-EC100 in a conveyor system

- Use the DriveControl as a template and mark the center of the two mounting holes. For the distance between the holes, see *"Dimensions"*, page 7.
- Drill two  $\varnothing$  5.6 - 6 mm (0.22 - 0.24 in) mounting holes at the marked spots.
- Insert the button head screws in the holes on the opposite side the DriveControl is to be mounted.
- Install the DriveControl to the frame with the screws protruding through the mounting holes.
- Slip the nuts to the screws and tighten.
- Ensure that there is a ground path between the DriveControl and the conveyor frame it is mounted to.



The DriveControl and conveyor frame should be at the same potential referenced to earth ground.

### Electrically installation

The connector supplied with the RollerDrive EC100 mates up with the header on the DC-EC100.

The connectors "Power input and I/O terminal" and "Sensor connection" are cage clamp terminals.

- To actuate the cage clamp, use the supplied tool or insert a small screwdriver.
- Plug in the RollerDrive connector.

## Initial startup and operation

### Initial startup

#### Inspections before initial startup

- Ensure that all bolts are tightened according to the specifications.
- Ensure that no additional dangerous areas arise due to interfaces with other components.
- Ensure that the wiring is in accordance with specifications and legal guidelines.
- Check all protection devices.
- Ensure that no bystanders are in dangerous areas around the conveyor.

### Operation

#### **NOTICE**

##### **Damage to the DriveControl or the motor of the RollerDrive due to induction**

- Do not push items along the roller conveyor by hand.
- Do not spin the RollerDrive manually.

#### Inspections before every startup

- Check the position of the DIP switches (*see "DIP switches", page 10*).
- Check the speed settings at the speed potentiometer. It is recommended to run the RollerDrive at maximum speed.
- Check the DriveControl for visible damage.
- Check all protection devices.
- Ensure that no bystanders are in dangerous areas around the conveyor.
- Clearly specify and monitor the way goods are placed on the conveyor.

#### Changing settings

- To reduce the speed manually, turn the potentiometer counterclockwise with a small screwdriver.
- To increase the speed manually, turn the potentiometer clockwise with a small screwdriver.
- To set the DIP switches, carefully use a small screwdriver.

## Maintenance and cleaning

### Warnings concerning maintenance and cleaning



#### CAUTION

**Risk of injury due to improper handling or accidental motor starts**

- Maintenance work and cleaning may only be executed by qualified and authorized persons.
- Only perform maintenance work after switching off the power. Ensure that the DriveControl cannot be turned on accidentally.
- Set up signs indicating maintenance work.

### Maintenance

#### Checking the DriveControl

The DriveControl must be checked at regular intervals to avoid malfunctions.

- Monthly check the DriveControl and its leads for visible damage.
- Annually ensure that the screws of the DriveControl are still tight and that the cables are still laid properly and connected to the terminals.

#### Replacing the DriveControl

If a DriveControl is damaged, it has to be replaced.

- Install a new DriveControl (see *"Abandonment"*, page 22 and see *"Installing the DC-EC100 in a conveyor system"*, page 18).

#### Replacing fuse

- Carefully use tweezers to remove and insert the fuse. Ensure you do not damage the fuse holder, the circuit board or its devices.

### Cleaning

Dust and dirt in combination with humidity may bridge the electric circuit. Therefore, in a dirty environment, periodic cleaning will help to avoid short-circuits which could damage the DriveControl.

- Regularly blow off dust and dirt by using low compressed air.

## Troubleshooting

### Error search

| Symptom                 | Possible cause                        | Help                                                                                                                   |
|-------------------------|---------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| System is not operating | No power supply                       | Check whether the output voltage of the power supply is within the specified voltage range.                            |
|                         | Wrong polarity of the bus line inputs | Verify the polarity of the bus line inputs to the DC-EC100 (see "Inputs and outputs", page 9).                         |
|                         | Wrong position of the DIP switch 1    | Verify that the position of the DIP switch 1 Logic (NPN or PNP) matches the sensor type (see "DIP switches", page 10). |
|                         | Fuse is blown                         | Replace the fuse (see "Replacing fuse", page 20).                                                                      |

The following errors are reported by illuminated LEDs:

(also see "Meaning of the LEDs", page 11)

| Symptom                                                                                                                                                   | Possible cause                                                                                                                                                                    | Help                                                                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Motor is in brake mode, red fault LED is on and error output is active ("No fault output" is active).                                                     | Invalid state of motor hall effect sensor <ul style="list-style-type: none"> <li>• Broken wire</li> <li>• Failed hall effect sensor</li> </ul>                                    | Replace the RollerDrive.                                                                                                                    |
|                                                                                                                                                           | Voltage over or under limits <ul style="list-style-type: none"> <li>• Power supply fluctuations, failure or overload condition</li> </ul>                                         | Check the power supply.                                                                                                                     |
| On a decline, motor is in brake mode momentarily. Red fault LED is on ("No fault output" is active) or power supply shutdown.                             | Over voltage detection (caused by over speed or excessive back EMF) <ul style="list-style-type: none"> <li>• decline angle too high</li> <li>• package weight too high</li> </ul> | <ul style="list-style-type: none"> <li>• Reduce decline angle</li> <li>• At decline conveyors use brake roller to keep speed low</li> </ul> |
|                                                                                                                                                           | Motor overrun, overset speed <ul style="list-style-type: none"> <li>• Package enters zone at a higher than anticipated speed</li> </ul>                                           | Reduce the package entry speed.                                                                                                             |
| Red fault LED is on and error output is active ("No fault output" is active).                                                                             | Low gain signal from sensor <ul style="list-style-type: none"> <li>• Dirty sensor lens or misaligned</li> </ul>                                                                   | Clean the sensor lens and align the sensor.                                                                                                 |
| Current folds back to maximum continuous current, amber fault LED is on.                                                                                  | Card or motor over temperature <ul style="list-style-type: none"> <li>• Excessive load or duty cycle</li> </ul>                                                                   | Reduce the load of packages or throughput of the zone                                                                                       |
| Current folds back to approximately 1.5 A while applying consistent torque. Red fault LED is on and error output is active ("No fault output" is active). | Motor stall condition <ul style="list-style-type: none"> <li>• Obstruction or load too heavy to be conveyed</li> </ul>                                                            | Once the stall condition is removed, the RollerDrive will resume normal operation.                                                          |
| Red fuse LED is on, all other LED's are off .                                                                                                             | Fuse is blown                                                                                                                                                                     | Replace fuse and check for possible reasons.                                                                                                |

## Abandonment and disposal

### Abandonment



#### CAUTION

##### **Risk of injury due to improper handling**

- Abandonment may only be executed by qualified and authorized persons.
- Only abandon the DriveControl after switching off the power. Ensure that the DriveControl cannot be turned on accidentally.

- Disconnect all cables from the DriveControl.
- Unscrew the screws attaching the DriveControl to the conveyor frame.
- Extract the DriveControl from the conveyor frame.

### Disposal

The operator is responsible for the proper disposal of the DriveControl. In doing so, industry-specific and local provisions must be observed for the disposal of the DriveControl and its packaging.

## Appendix

### Accessories

#### DriveControls

| Part           | Part # |
|----------------|--------|
| Z-Card EC Easy | 89Z2   |
| Z-Card EC Full | 89Z3   |

#### Plugs and cables

| Part               | Description                                                                                                                                                                                                                                                                                    |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power and I/O plug | <ul style="list-style-type: none"> <li>8-pin cage clamp type connector, Wago part # 231-308/026-004</li> <li>Wire diameter: <ul style="list-style-type: none"> <li>Minimum 0.08 mm<sup>2</sup> (AGW 28)</li> <li>Maximum 2.5 mm<sup>2</sup> (AGW 12)</li> </ul> </li> </ul>                    |
| Sensor plug        | <ul style="list-style-type: none"> <li>4-pin cage clamp type connector, Wago part # 734-104/000-004</li> <li>Wire diameter: <ul style="list-style-type: none"> <li>Minimum 0.08 mm<sup>2</sup> (AGW 28)</li> <li>Maximum 1.5 mm<sup>2</sup> (AGW 14)</li> </ul> </li> </ul>                    |
| Motor plug         | <ul style="list-style-type: none"> <li>The motor plug for the RollerDrive consists of a plug and terminal pins <ul style="list-style-type: none"> <li>Plug: AMP part # 175778-8</li> <li>Terminal pins: AMP part # 1-175102-1</li> </ul> </li> <li>Crimping tool AMP part # 9184381</li> </ul> |

## Appendix

### Glossary

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Back EMF</b>         | Electromotive force (voltage) generated by a package arriving at high speed at a powered RollerDrive under no load prior to the package's arrival. EMF is a counter-voltage phenomenon that is always present in a motor. Excessive back EMF can cause a current backlash that may damage the DriveControl or power supply. Care should be taken to minimize excessive back EMF by minimizing the speed differences between the gravity conveyor and/or different zones of powered conveyor sections. |
| <b>Coast mode</b>       | The RollerDrive is running freely without power or braking.                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Dynamic braking</b>  | For DC motors, dynamic braking is a method of stopping a motor by applying a resistive load across the motor winding leads after disconnection from the DC supply. The motor operates as a generator. By its nature, dynamic braking has no holding power by itself, i.e. the motor can still be rotated by outside forces. Interroll has added zero motion hold to achieve this.                                                                                                                     |
| <b>Idler rollers</b>    | Non-powered rollers attached to a RollerDrive typically via O-rings or multi-rip belts.                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>O-rings</b>          | O-rings made of materials such as polyurethane that connect RollerDrives to their associated idler rollers.                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Photoeye</b>         | An ON/OFF sensor that uses light to sense the presence of objects. If the light beam is broken, an object is present. Usually the light is reflected back to the sensor via a reflector placed on the opposite side of the conveyor frame from the sensor itself. The DC-EC100 can use either NPN type or PNP type photoeyes. NPN sensors indicate an active state by a grounded connection being made (NPN mode) or a 24 VDC connection being made (PNP mode).                                       |
| <b>RollerDrive</b>      | One of several types of DC powered rollers manufactured by Interroll Corporation.                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Zero motion hold</b> | For DC motors, zero motion hold is a method of holding a motor by applying a small amount of current to the motor winding leads. When the DC-EC100 is commanded to stop and accumulate, the braking action is twofold. First, the motor/package is stopped using dynamic braking. Second, the motor is held in place by zero motion hold. In this state the DC-EC100 will resist being rotated by outside forces.                                                                                     |

## Appendix

### Manufacturer's declaration

**in terms of the EC-Machine Directive 98/37/EC and its amendment 98/79/EC, Annex II B**

#### The manufacturer:

Interroll Engineering GmbH  
Höferhof 16  
D - 42929 Wermelskirchen  
Germany

**hereby declares with sole responsibility that the product range**

- DC-EC100

**is not a ready-to-use assembly in terms of the EC-Machine Directive and therefore does not fully comply with the requirements of this directive. It must not be put into service until the machinery into which it is to be incorporated has been declared to conform with the provisions of the Machine Directive.**

#### Applied EC Directives:

Machine Directive 98/37/EC and its amendment 98/79/EC  
Low Voltage Directive 2006/95/EC  
EMC Directive 2004/108/EC  
RoHS Directive 2002/95/EC

#### Applied harmonized norms:

EN ISO 12100 Part1 and Part2

Wermelskirchen, November 7<sup>th</sup> 2007

Armin Lindholm  
(Managing Director)

(This declaration can be obtained at [www.interroll.com](http://www.interroll.com), if needed.)



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